=> d his

(FILE 'USPAT' ENTERED AT 15:07:38 ON 07 MAR 1999)
L1 3883 S FREE ACID FORM
L2 4 S L1(P)HYALURONIC
L3 43 S L1(P)POLYSACCHARIDE#
L4 52 S L1(P)(CHONDROITIN OR HEPARIN OR (CARBOXYMETHYL CELLULOSE
) O
L5 2 S (FREE ACID FORM)/TI

=> d l5 1 2 cit ab

1. 4,223,132, Sep. 16, 1980, Selective conversion of benzyl alcohol carboxylates to the **free acid form**; Teruji Tsuji, et al., 540/215, 221, 226, 227, 228, 230 [IMAGE AVAILABLE]

US PAT NO: 4,223,132 [IMAGE AVAILABLE] L5: 1 of 2

ABSTRACT:
A process for preparing free carboxylic acids which comprises treating an optionally substituted benzyl ester with a Lewis acid, preferably in the presence of a cation acceptor, followed by hydrolysis, if required.

2. 4,216,111, Aug. 5, 1980, Stable dispersions of fluorescent whitening agents of the bis-triazinylaminostilbene group in **free acid form** and method of preparing same; John D. Thompson, 252/301.23, 301.21 [IMAGE AVAILABLE]

US PAT NO: 4,216,111 [IMAGE AVAILABLE] L5: 2 of 2

ABSTRACT:
Stable aqueous dispersions of fluorescent whitening agents of the bis-triazinylaminostilbene group in substantially free acid form are prepared by deflocculating an aqueous mixture containing said agent in flocculated form.

=> d l2 1-4 cit ab

1. 5,789,571, Aug. 4, 1998, Method of making free acids from polysaccharide salts; Ellington M. Beavers, et al., 536/124, 119, 127 [IMAGE AVAILABLE]

US PAT NO: 5,789,571 [IMAGE AVAILABLE] L2: 1 of 4

ABSTRACT:
A **free acid form** of a polysaccharide is produced from its alkali-metal salt. In one example, free-form **hyaluronic** acid is produced by preparing a solution of an alkali-metal salt of **hyaluronic** acid, dispersing into the solution a strong acid, enclosing the dispersion within a semi-permeable membrane, dialyzing the dispersion in water, and harvesting the product from within the membrane. The strong acid can be hydrochloric acid, sulfuric acid, nitric acid, orthophosphoric acid, or oxalic acid, for example. The semi-permeable membrane has a molecular weight cut-off large enough to pass the strong acid, and preferably much larger. The invention provides a simple and economical way to produce a product which is not commercially available.

2. 5,280,042, Jan. 18, 1994, Disinfecting and sanitizing compositions; John A. Lopes, 514/557; 424/49, 55; 510/111, 131, 218, 234, 382, 383 [IMAGE AVAILABLE]

US PAT NO: 5,280,042 [IMAGE AVAILABLE] L2: 2 of 4

ABSTRACT:
This invention relates to sanitizing and disinfecting compositions. More particularly, the present invention concerns anhydrous sanitizing and disinfecting concentrate composition suitable for dilution in water to produce aqueous antimicrobial solutions, particularly suited for use as mouthwashes, in human and animal hygiene, and as fresh fruit and vegetable sanitizers, and sanitizers for food processing and other equipment.

3. 4,886,787, Dec. 12, 1989, Method of preventing adhesion between body tissues, means for preventing such adhesion, and process for producing said means; Anthony N. de Belder, et al., 514/57, 54, 59, 60, 62; 536/55.1, 55.2, 56, 58, 106, 112 [IMAGE AVAILABLE]

US PAT NO: 4,886,787 [IMAGE AVAILABLE] L2: 3 of 4

ABSTRACT:

The invention is concerned with a method of preventing adhesions or accretions of body tissues inter se by means of employing a degradable gel of a crosslinked carboxyl-containing polysaccharide. The invention also covers a gel product to be used for this purpose, and a process for preparing said product by means of crosslinking with a di- or polyfunctional expoxide at a pH of from 2 to 5.

4. 4,808,576, Feb. 28, 1989, Remote administration of hyaluronic acid to mammals; Richard H. Schultz, et al., 514/54, 825; 536/55.1 [IMAGE AVAILABLE]

US PAT NO: 4,808,576 [IMAGE AVAILABLE] L2: 4 of 4

ABSTRACT:
The present disclosure is concerned with the discovery that hyaluronic acid, an agent well known to reduce the sequelae of trauma in mammalian joint tissue when applied directly to the traumatized tissue, will be carried to such traumatized tissue by the mammal's natural processes if applied at a site remote from the traumatized tissue. Thus, hyaluronic acid, in any therapeutically acceptable form, can be administered by the typical remote routes including intravenous, intramuscular, subcutaneous and topical.
This makes the utilization of hyaluronic acid much more convenient and attractive. For instance the treatment of arthritis in horse or human joints with hyaluronic acid no longer requires more difficult intra articular injections.

=> s l3 and l4

L6 1 L3 AND L4

=> d l6 1 cit ab

1. 4,167,488, Sep. 11, 1979, Hard surface cleaning compositions; Justin J. Murtaugh, 510/434, 421, 424, 471, 499 [IMAGE AVAILABLE]

US PAT NO: 4,167,488 [IMAGE AVAILABLE] L6: 1 of 1

ABSTRACT:

An aqueous composition for hard surface cleaning containing, by weight thereof, about 30% of an alkanolamine and about 0.8% of a water insolubilized **polysaccharide** having both hydroxyl and carboxyl groups, the ratio range of the **free acid form** to the salt form of the carboxyl groups being about 0.07/1 to 3/1. Preferably, the alkanolamine is monoethanolamine and the **polysaccharide** is a carboxyalkyl cellulose ether, such as a water insolubilized form of sodium **carboxymethylcellulose**. Preferably, the composition also contains about 0.5% of a fluorochemical and/or organo silicone type surfactant.

=> s l3 and polysaccharide/ti

```
           422 POLYSACCHARIDE/TI
L7           1 L3 AND POLYSACCHARIDE/TI
```

=> d l7 1 cit ab

1. 5,789,571, Aug. 4, 1998, Method of making free acids from **polysaccharide** salts; Ellington M. Beavers, et al., 536/124, 119, 127 [IMAGE AVAILABLE]

US PAT NO: 5,789,571 [IMAGE AVAILABLE] L7: 1 of 1

ABSTRACT:
A **free acid form** of a **polysaccharide** is produced from its alkali-metal salt. In one example, free-form hyaluronic acid is produced by preparing a solution of an alkali-metal salt of hyaluronic acid, dispersing into the solution a strong acid, enclosing the dispersion within a semi-permeable membrane, dialyzing the dispersion in water, and harvesting the product from within the membrane. The strong acid can be hydrochloric acid, sulfuric acid, nitric acid, orthophosphoric acid, or oxalic acid, for example. The semi-permeable membrane has a molecular weight cut-off large enough to pass the strong acid, and preferably much larger. The invention provides a simple and economical way to produce a product which is not commercially available.

=> s l4 and (chondroitin/ti or heparin/ti or (carboxymethyl cellulose)/ti or carboxymethylcellulose/ti)

```
            14 CHONDROITIN/TI
           179 HEPARIN/TI
            76 CARBOXYMETHYL/TI
          2004 CELLULOSE/TI
            20 (CARBOXYMETHYL CELLULOSE)/TI
                 ((CARBOXYMETHYL(W)CELLULOSE)/TI)
            20 CARBOXYMETHYLCELLULOSE/TI
L8           5 L4 AND (CHONDROITIN/TI OR HEPARIN/TI OR (CARBOXYMETHYL CELL
ULO
               SE)/TI OR CARBOXYMETHYLCELLULOSE/TI)
```

=> d l8 1-5 cit ab

1. 4,508,894, Apr. 2, 1985, Acid-type **carboxymethyl cellulose** and process for preparing the same; Takeo Omiya, 536/89, 87, 98 [IMAGE AVAILABLE]

US PAT NO: 4,508,894 [IMAGE AVAILABLE] L8: 1 of 5

ABSTRACT:
The present invention provides a novel water-soluble acid-type carboxymethyl cellulose characterized by:
(a) having a total degree of substitution "x" by carboxymethyl group of

0.42 to 3.00 per anhydrous glucose unit, the degree of substitution "y" by acid-type carboxymethyl groups being to 100% of the total degree of substitution, provided that when "x" is less than 2.0, "y" shall be less than (1.25.times.-0.5), the remaining carboxymethyl group being of the alkali salt type,
(b) having an average degree of polymerization of 50 to 1500, and
(c) being soluble in water,
which is useful as dispersant, carrier, coating agent and various other materials and also as an intermediate for carboxymethyl cellulose derivatives; and a process for preparing them.

2. 4,479,799, Oct. 30, 1984, Hypodermic syringe containing microfibers of an amorphous **heparin** salt; Charles G. Thiel, 604/187; 600/576 [IMAGE AVAILABLE]

US PAT NO: 4,479,799 [IMAGE AVAILABLE] L8: 2 of 5

ABSTRACT:
Microfibrous heparin salts, nonwoven webs of such fibers, a process for preparing the fibers and the use of the webs for the rapid heparinization of blood are disclosed.

3. 4,440,926, Apr. 3, 1984, **Heparin** esters and processes for their preparation; Jean S. Mardiguian, 536/21 [IMAGE AVAILABLE]

US PAT NO: 4,440,926 [IMAGE AVAILABLE] L8: 3 of 5

ABSTRACT:
Esters of heparin, which are derived from heparin by replacement of the carboxyl groups of heparin by groups of the formula: ##STR1## in which R is a hydrogen atom or a methyl group and A is a hydrogen atom or a methyl, phenyl, ##STR2## X representing a chlorine atom or a nitro, alkyl containing 1 to 4 carbon atoms or methoxy group and Y representing a hydrogen or chlorine atom, the replacement being a partial or total replacement when A is other than a hydrogen atom or a methyl or phenyl group and the replacement being a partial replacement corresponding to a 10% to 90% esterification percentage of the carboxyl groups when A is a hydrogen atom or a methyl or phenyl group, and the alkali metal, alkaline earth metal, magnesium, quaternary ammonium and amine salts of the said esters. These compounds are intermediate products for preparing medicaments.

4. 4,405,612, Sep. 20, 1983, **Heparin** web compositions; Charles G. Thiel, 514/56; 428/401, 903; 442/50, 340; 536/21 [IMAGE AVAILABLE]

US PAT NO: 4,405,612 [IMAGE AVAILABLE] L8: 4 of 5

ABSTRACT:
Microfibrous heparin salts, nonwoven webs of such fibers, a process for preparing the fibers and the use of the webs for the rapid heparinization of blood are disclosed.

5. 4,168,377, Sep. 18, 1979, Process of preparing mixed **heparin** salts; Jean Choay, et al., 536/21; 514/822 [IMAGE AVAILABLE]

US PAT NO: 4,168,377 [IMAGE AVAILABLE] L8: 5 of 5

ABSTRACT:
Mixed or simple heparin salt having a reduced amount of a selected metal ion alone or with another metal ion in a mixed heparin. A heparin salt having a reduced sodium content being essentially sodium free and having a selectively high calcium or other selected salt content. A process for making these heparin salts by reaction with the selected metal salt, including, optionally, dialysis or precipitation. A typical heparin salt is a calcium heparin essentially free of sodium (like containing less

than about 1% by weight of sodium), or mixed calcium-sodium heparin with a limited, predetermined content of sodium. Drug compositions containing these heparin salts and a pharmaceutical carrier. The drugs made from these heparin salts are useful as anti-coagulants.